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## NEW NEOTROPICAL SATURNIOID MOTHS (LEPIDOPTERA)

BY FRANK JOHNSON AND CHARLES D. MICHENER

In this paper are described several striking new saturnioid moths from the collection of one of the authors (Johnson). Holotypes and allotypes will be deposited in the collection of the American Museum of Natural History. Paratypes, where sufficient numbers exist, will be placed in the Johnson collection, in the British Museum (Natural History), in the United States National Museum, in the Museum of Comparative Zoölogy, and in the Museu Nacional, Brazil.

We wish to acknowledge the aid of Mrs. Evelyn Hastings in making the genitalic preparations of the new species and of related forms studied in the preparation of this paper.

### ***Dysdaemonia raveni*, new species**

This remarkable species does not closely resemble any other species of the genus. In the arrangement of the lines on the wings it is as close to *D. boreas* (Cramer) as to any species, but it differs strikingly from that as well as other species by the strongly serrated wing margins and the more broadly pectinate antennae. The genitalia are markedly different from those of *boreas*, particularly distinctive features being the short saccus, short aedeagus, and tridentate uncus.

MALE: Length of body 32 mm.; of forewing 62 mm. (65 in paratype); expanse 119 mm. (130 in paratype). Body gray brown, dorsum of thorax gray, vertex, antennae, labial palpi, and portions of the legs, especially tibiae and tarsi, brownish black. Antennae strongly pectinate for the genus, basal rami of median segments about three times as long as length of main axis of segment. Wings shaped much as in *boreas* but margins strongly

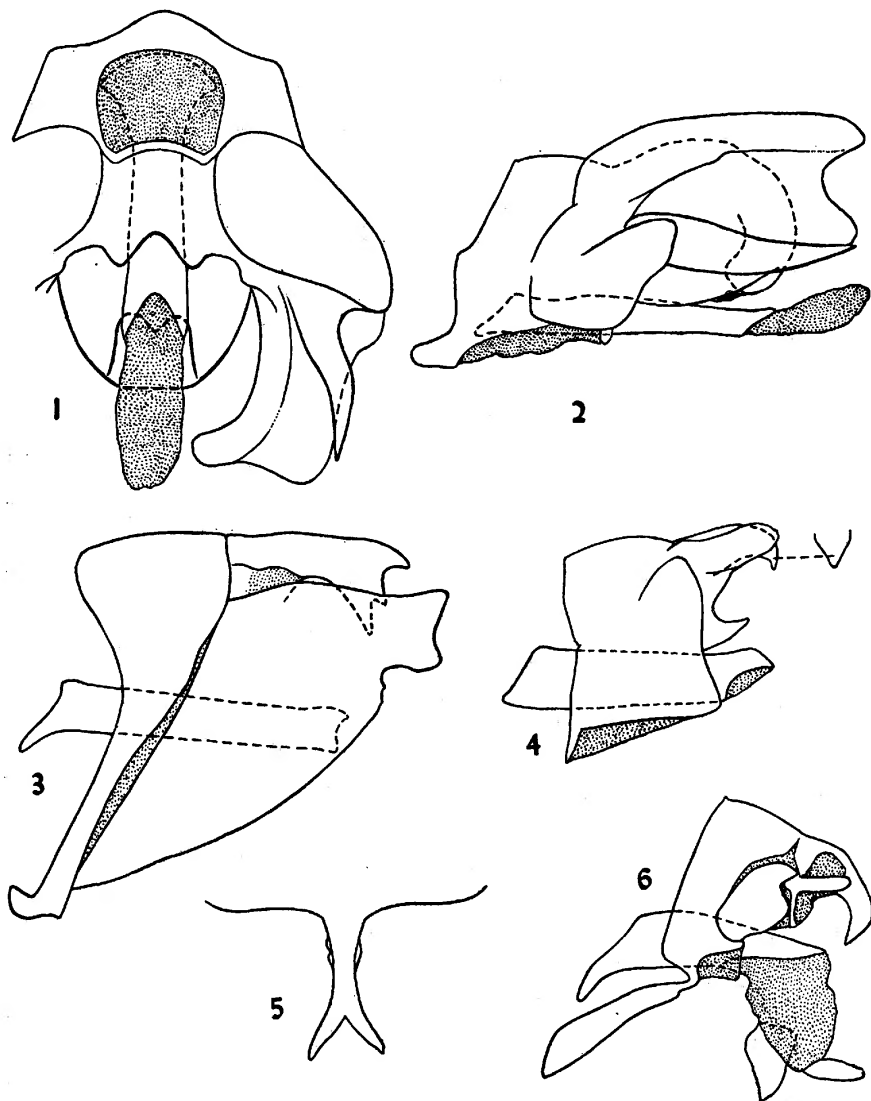


FIG. 1. *Dirphiopsis albofasciata*, new species, ventral view of male genitalia.

FIG. 2. Idem, lateral view of same.

FIG. 3. *Dysdaemonia raveni*, new species, lateral view of male genitalia.

FIG. 4. *Dirphia rufescens*, new species, lateral view of male genitalia with posterior view of apex of uncus.

FIG. 5. *Dirphia flavosignata*, new species, apex of eighth sternum of male.

FIG. 6. Idem, lateral view of male genitalia.

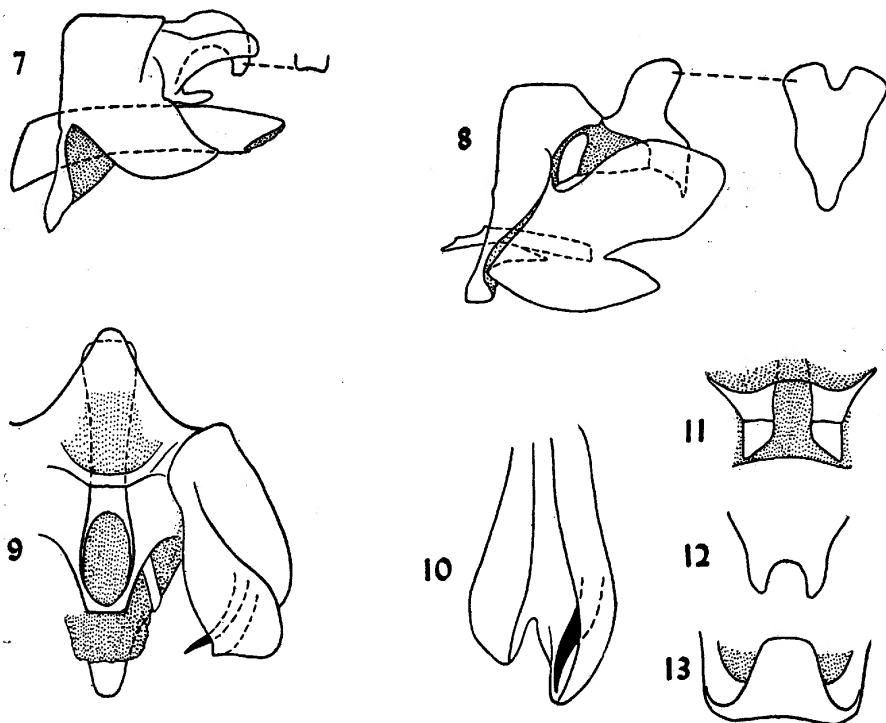


FIG. 7. *Dirphia centralis*, new species, lateral view of male genitalia, with posterior view of apex of uncus.

FIG. 8. *Dirphia levis*, new species, lateral view of male genitalia, with posterior view of apex of uncus.

FIG. 9. *Automeris lauta*, new species, ventral view of male genitalia.

FIG. 10. *Automeris oaxaca*, new species, inner view of harpé.

FIG. 11. *Idem*, median apical part of ninth sternum.

FIG. 12. *Idem*, ventral view of median portion of gnathos.

FIG. 13. *Idem*, ventral view of apex of uncus.

dentate, being produced on each vein; tails of hind wings slender and parallel sided, not expanded apically (that on right side of fig. 3 is complete). Ground color of wings light gray; all lines on wings broader and darker than in *boreas*; forewing on upper side with subbasal blackish area behind discal cell (in paratype extending in dark gray to the costal margin) and extending to posterior margin of wing, this area separated from premedian line by narrow band of ground color; premedian line convex towards wing base (as in *boreas*) and brownish black, distal to this line a broad belt of dark grayish brown nearly as dark as the line itself and with its distal margin irregularly dentate; transparent spots beyond end of

discal cell rather large, each with a blackish spot near its base; postmedian line feebly undulate, dark grayish brown, passing very close to apices of transparent spots; subterminal line near postmedian although well separated from it even posteriorly, this line more undulate than in *boreas*, curved basally at anterior end; distal to this line is a series of blackish spots, one in each cell, the spots more or less pointed apically and broad basally; apical marginal area dark brownish gray, fringe pale in concavities between dentations. Posterior wing without transparent spot; upper side with premedian line indicated only near anal margin; postmedian line weakly undulate, dark brownish gray; subterminal line of the same color, angulate on vein  $M_2$ ; distal to subterminal line is a row of dark spots similar to those of forewing but less conspicuous, those in front of vein  $M_3$  dark brownish gray and transverse, those in cells  $M_3$  and  $Cu_1$  blackish and pointed or rounded apically, behind  $Cu_2$  an irregular blackish line; apical margin narrowly dark brownish gray, the fringe whitish in the concavities between the marginal dentations. Under surfaces of wings pale brownish gray, the postmedian and subterminal lines weakly indicated, as are also the subterminal spots behind vein  $M_3$  in the hind wing.

TYPE MATERIAL: Holotype male: El Alto, 30 miles north of Talara, Peru, January 24, 1941, collected by the late H. C. Raven of the American Museum of Natural History. Paratype male: Puna Island (?), Ecuador, collected by H. and D. L. Frizzell. This specimen was kindly presented to one of us (Johnson) by Dr. W. T. M. Forbes.

### *Dirphia rufescens*, new species

A member of Bouvier's (1935) group of *D. somniculosa* (Cramer) apparently closest to *areolata* Bouvier, *moderata* Bouvier, *dolosa* Bouvier, and *javarina* Butler with its subspecies *brunneo-alba* Bouvier and *saturata* Bouvier. It differs from all of these in lacking the undulate subterminal line of the forewings and the outer dark line of the hind wings, so that the latter have only a single line. The red brown color of the wings fading to pinkish cream at the bases of the hind wings, the deep red brown of the head and thorax, and the red rather than yellowish abdominal bands are also distinctive. The faintness of the discal spots of both wings separates this species further from *areolata*, and the slightly arcuate, not angulate, premedian line of the forewings

distinguishes it from all except perhaps *dolosa*, which has not been available for study.

MALE: Length of body 33 mm. (30–36 mm. among paratypes), of forewing 41 mm. (39–42 mm. among paratypes); expanse 86 mm. (80–87 mm. among paratypes). Body covered with brownish red hairs, a few whitish ones intermixed on dorsum, abdomen with transverse black bands on dorsum between the red bands. Legs and labial palpi brownish red. Antennae straw colored. Wings red brown, paler than the body, the lines darker red brown; forewing above with an oblique dark line at extreme base, margined distally with whitish; premedian line dark, margined basally with whitish, slightly arcuate, not or scarcely angulate; a small dark smudge visible at apex of discal cell; postmedian line dark, margined distally with whitish; subterminal line completely absent, the color being uniform from the postmedian line to the wing margin; hind wing pinkish cream basally, fading into red brown basal to end of discal cell; a small dark smudge at end of discal cell; postmedian line dark, not margined with whitish; portion of wing beyond this line uniformly colored. Under surfaces of wings red brown, slightly paler than above, showing a faint smudge at apex of discal cell; postmedian line feebly visible near posterior margin of each wing.

TYPE MATERIAL: Holotype male and 12 male paratypes: Minas Gerais, Brazil.

### *Dirphia flavosignata*, new species

A member of the *rosacordis* group of Bouvier, unquestionably closely related to *D. rubripes*. It differs from the latter in smaller size, in the slightly paler and pinker coloration of forewings, in the pinker hind wings, in the fainter transverse lines on wings, the premedian one of forewing and the one of hind wing nearly absent, in the paler and pinker under surfaces of the wings, and in the small yellow bar, frequently centered with dark scales, on the under surface across the outer end of the discal cell of each wing. In spite of the rather minor differences in the coloration between this species and *rubripes*, the genitalia are strikingly different, the harpes being smaller and more angulate in *flavosignata*. The eighth sternum of the male in *flavosignata* is produced to a long median apical process which is bifurcate. In *rubripes* there are two projections arising separately from the margin of this sternum.

MALE: Length of body 21 mm. (20–24 mm. among para-

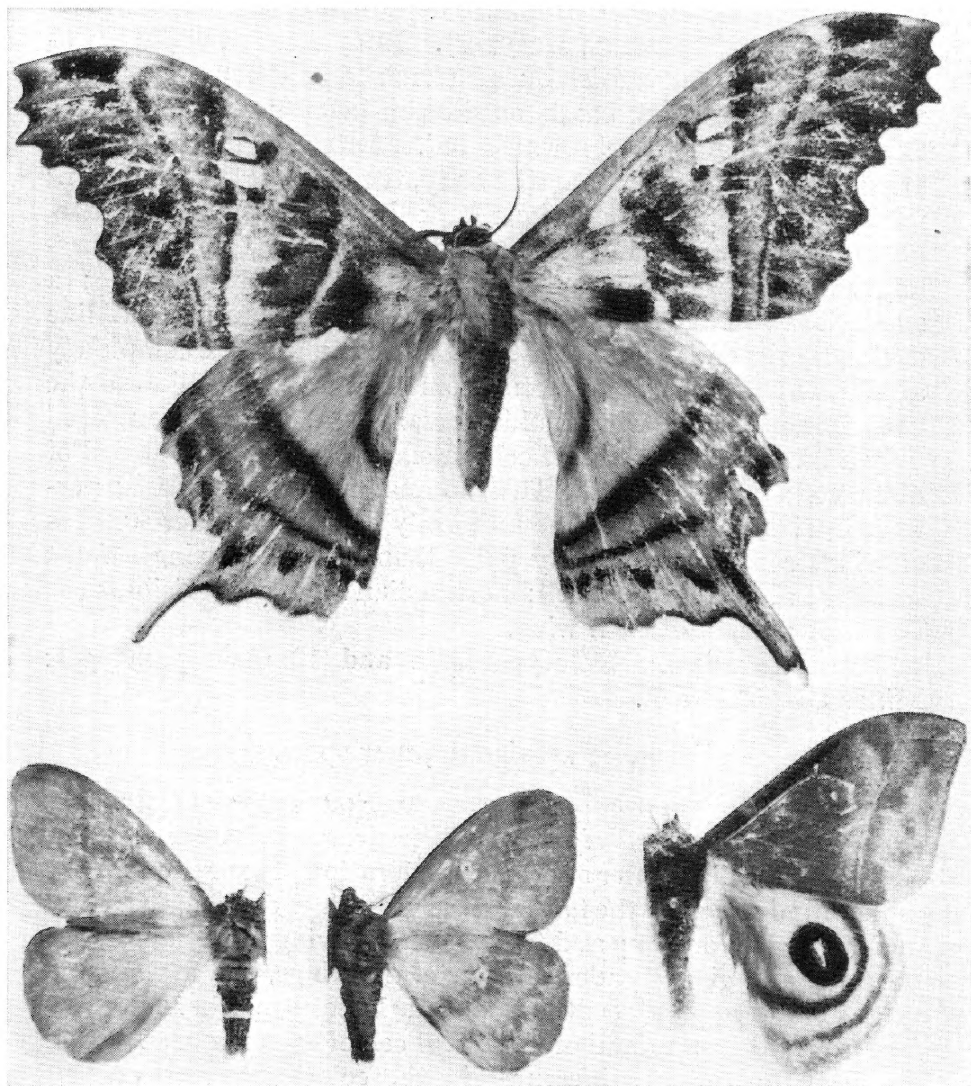


FIG. 14. Above. *Dysdaemonia raveni*, holotype. Below. Left, *Dirphia flavosignata*, holotype; center, idem, ventral view; right, *Automeris lauta*, holotype. All natural size.

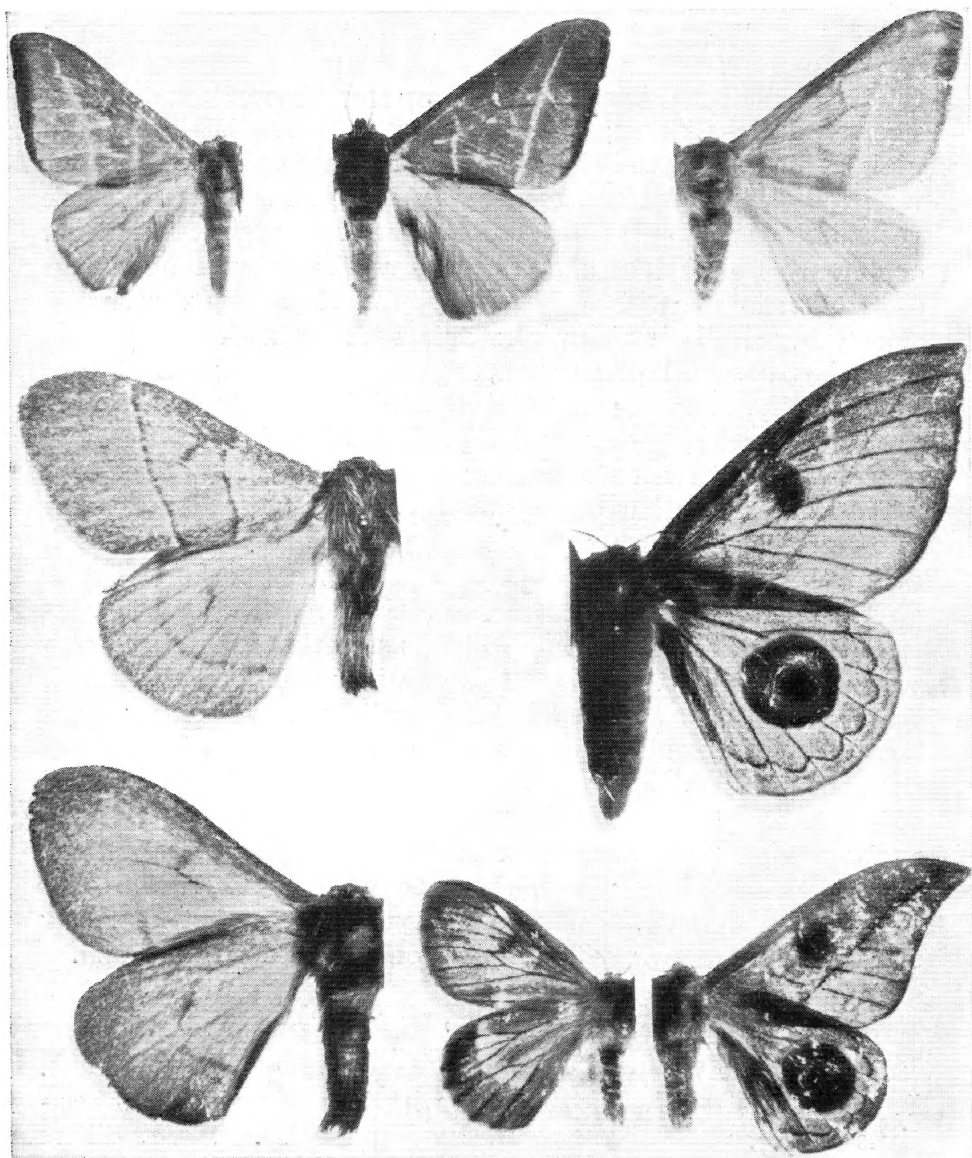


FIG. 15. Upper Row. Left, *Dirphia levis*, holotype; center, idem, paratype male; right, idem, allotype. Center Row. Left, *Dirphia rufescens*, holotype; right, *Automeris oaxaca*, allotype. Lower Row. Left, *Dirphia rufescens*, holotype, ventral view; center, *Dirphiopsis albofasciata*, holotype; right, *Automeris oaxaca*, holotype. All natural size.

types), of forewing 32 mm. (varying to 31 mm. among paratypes); expanse 57 mm. (varying to 65 mm. among paratypes). Antennae pinkish testaceous; vestiture of head pinkish brown or brown, that of dorsum of thorax the same color anteriorly, shading to strong pink posteriorly; sides and venter of thorax with vestiture pink to pinkish brown, that of legs of the same color basally but tarsi and portions of tibiae deep pink; abdominal terga with black vestiture, basal white fasciae present but those of distal segments commonly obscured because of contraction of the abdomen; sides of abdomen with a row of small black spots; venter and sides otherwise brownish pink; apical tuft of abdomen orange. Forewings brownish pink above, slightly paler and pinker distally than basally, premedian line faintly visible, a little darker than the ground color, nearly straight, postmedian line a little more conspicuous but otherwise similar; apex of discal cell marked by a narrow transverse bar of yellowish, centered with a short dark line. Hind wing strong pink basally, becoming brownish pink distally; postmedian line faintly visible, a little darker than the ground color; apex of discal cell sometimes marked by an inconspicuous dark transverse line which is sometimes margined with yellowish scales. Under surfaces of wings pale brownish pink, with broad darker postmedian lines and less conspicuous, irregularly dentate preapical lines; apices of discal cells of both wings marked by a transverse patch of yellow, centered with a weak and often broken blackish line.

TYPE MATERIAL: Holotype male and four male paratypes: Sergipe, Brazil. The holotype bears the date April 2, 1939.

Another specimen, similar to the type series except for larger size (length of forewing 40 mm.), is from Espírito Santo, Brazil.

### ***Dirphia centralis*, new species**

A member of Bouvier's group of *Dirphia tarquinia* (Cramer). It runs closest to *D. horca* Dognin with its variants or near relatives *subhorca* Dognin and *horcana* Schaus. *D. centralis* differs from these in the large black discal spot of the hind wing, the black line at the apex of the cell of the forewing in the center of the anterior arm of the white "Y," and other characters.

MALE: Length of body 30 mm. (26–33 mm. among paratypes), of forewing 42 mm. (41–44 mm. among paratypes); expanse 78 mm. (varying to 88 mm.). Antennae testaceous; vestiture of head and dorsum of thorax dark brown, that of sides and venter of



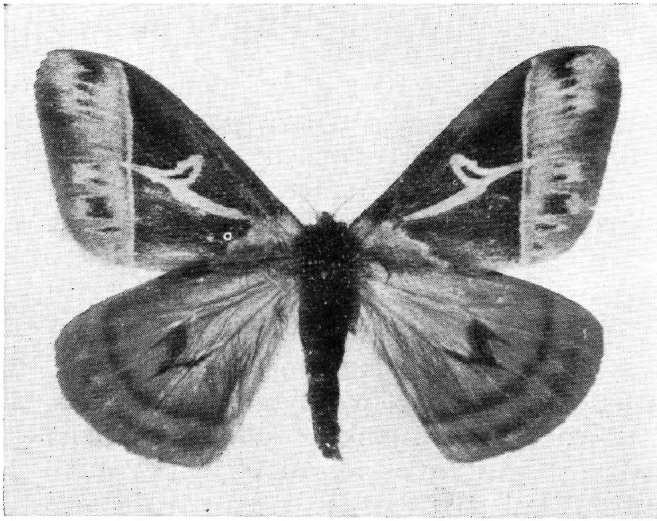


FIG. 16. *Dirphia centralis*, holotype, natural size.

thorax, of legs, and of venter of abdomen reddish brown; vestiture of dorsum of abdomen black. Forewing on upper surface with basal area light brown, terminated distally by the oblique wavy, lighter brown premedian line; median area dark brown, containing the white mark usual for this group of species, the anterior arm of this mark rather short and containing a distinct black line which is at the outer end of the discal cell; postmedian line straight, white, reached or crossed by the white mark of the median area; ground color of area beyond postmedian area brown, shaded basally with white, the outer margin of the whitish portion forming an irregular subterminal line, the whitish portion containing an irregular and variable row of dark brown spots. Hind wings with ground color pink, on upper surface, with an irregularly shaped black spot at apex of discal cell and with postmedian and subterminal dark gray arcuate lines. Under surfaces brown or pinkish brown with a dark transverse line at apex of cell of forewing, a straight whitish postmedian line across the hind wing (sometimes scarcely visible).

TYPE MATERIAL: Holotype male and eight male paratypes from an altitude of 1000 meters at Tarma, Peru.

#### *Dirphia levis*, new species

This beautiful species does not fall into any of Bouvier's groups. Considering wing shape, genitalic characters, and the uniformly

colored abdomen, it seems to be closest to his group of *D. gaujoni* Dognin. It differs from the members of this group in the straight postmedian line of the forewing and more brilliant coloration. *D. levis* is unusual among species of *Dirphia* in having the abdominal vestiture smooth and recumbent, without the long, coarse, suberect hairs which usually characterize the abdomens of this and related genera. The pink color in this species is subject to considerable variation, being deep and brilliant in some, considerably paler in others.

MALE: Length of body 24 mm. (23–25 mm. among paratypes), of forewing 32 mm. (30–33 mm. among paratypes); expanse 61 mm. (56–62 mm. among paratypes). Antennae testaceous; vestiture of front of head pink, of labial palpi pink, varying to pinkish brown; vestiture of dorsum of thorax pink except for a transverse yellow band across extreme anterior end of thorax; sides and venter of thorax and basal portions of legs yellow; tibiae, tarsi, and portions of anterior femora pink; abdomen pink dorsally, yellow ventrally, the apical tuft pinkish yellow. Forewing on upper side with ground color pink, basal area slightly pruinose posteriorly; premedian line narrow, white, curved somewhat towards the wing base near costa, margined distally by a band of light olive green; postmedian line straight, white, margined basally by a band of light olive green; pink area between the two olive bands brighter than other portions of the forewing (except marginal fringe) and the same color as dorsum of thorax, this pink area in some specimens narrowed or even absent posteriorly because of the convergence of the olive bands and sometimes separated from the costa by a streak of light olive green; area beyond postmedian white line pink shading into olivaceous pink anteriorly and outer margin sometimes olivaceous; apex of discal cell marked by a small white transverse line; apical fringe dark pink. Hind wing pink, darkest at posterior angle; fringe yellow except posteriorly where it is pink. Under surface of forewing pink, yellow apically and along costal margin, the veins faintly streaked with yellow; postmedian line darker pink than ground. Under surface of hind wing yellow, faintly pinkish on disc and with an arcuate pinkish postmedian line; apex of cell marked by a transverse pink spot.

FEMALE: Length of body 21 mm. (varying to 19 among paratypes), of forewing 34 mm. (varying to 33 among paratypes); expanse 65 mm. Pattern and coloration similar to male but all

markings more diffuse and colors all pale, yellow areas particularly pale and almost cream color; the pink pale, having a grayish cast in areas where it is palest in the male; olive green bands of the male are pale greenish brown or even yellowish brown. The outer margin of the upper surface of the forewing is more contrastingly dark than in the male, and the postmedian line on the under surface of the forewing is virtually absent in the female.

TYPE MATERIAL: Holotype male, allotype female, and 25 male and two female paratypes: Rio Piene, Apurimac, Peru. An additional male specimen is from Huanuco, Peru, May (?).

### ***Dirphiopsis albofasciata*, new species**

This species is not closely related to any other. It differs from other *Dirphiopsis* by the absence of an epiphysis on the fore tibiae of the male and by the completely different wing pattern. The male genitalia are very different from those of other species of *Dirphiopsis*, the harpes being articulated to the ninth sternum instead of fused with it. Superficially this species resembles to some extent *Dirphia fumosa* (C. and R. Felder) which differs in having more white spots on the wings, less conspicuous white postmedian bands, and shorter and more rounded forewings, as well as in the generic characters.

MALE: Length of body 19 mm., length of forewing 26 mm., expanse 51 mm. Antennal shafts brown, the rami black. Vestiture of head, labial palpi, legs, and most of dorsum of thorax dark brownish gray; vestiture of sides of thorax and a band across dorsum at posterior end of thorax pink; dorsum of abdomen black with narrow pale brown bands, venter grayish brown, apex of abdomen bright pink. Upper surfaces of wings dark brownish gray, browner basally than apically; veins, including those passing through discal cells, showing as black lines; premedian line visible only as a faint whitish streak, bordered basally by black, crossing the discal cell of the forewing beyond middle of cell; postmedian line conspicuous, white, broken by the black veins, broadly sigmoid in the forewing, arcuate in the hind wing; apical fringe of hind wing gray. Under surfaces similar to upper but ground color paler, premedian line entirely wanting, postmedian line broader, white, placed as on upper surfaces, apex of cell of forewing marked by a small transverse black bar, outer margin of hind wing noticeably paler than adjacent ground color.

TYPE MATERIAL: Holotype male: Chiapas, Mexico. It is presumed to be from the vicinity of Comitán.

***Automeris lauta*, new species**

A member of the group of *A. io* (Fabricius) which is confined to North and Central America. It is impossible to run the species to the *io* group in Bouvier's key (1936) because of the gray, rather than yellow or orange disc of the hind wing, as well as because outer line of the forewing is continuous rather than composed of a series of lunules. The latter character is shared by *A. iris* and its subspecies, a fact evidently not considered by Bouvier in preparing his key. The gray disc of the hind wing is, however, distinctive in the group. *A. lauta* is most closely related to *A. iris* (Walker) which with its subspecies and forms under the names *daudiana* Druce, *occidentalis* Draudt, and *ferruginea* Draudt ranges from Guatamala well north into Mexico. Since it evidently occurs within the range of *iris*, it is no doubt a distinct species. Furthermore its characters are quite distinct from those of *iris*.

The apices of the forewings are more acute than in *iris*, the outer margins being concave instead of convex. The upper surface of the forewing is chestnut brown, paler and variegated with yellowish distally, instead of gray or pale brown as in the *iris* group. The lines of the forewing are yellow, much paler than the ground, instead of dark as in *iris*, the basal line even more strongly zigzag than in *iris*. The discal spot of the forewing is margined by a gray line, without the series of dots found in *iris*. The eye of the hind wing is essentially as in *iris*, but the bluish shading around the white central streak is reduced. The disc of the hind wing is pinkish gray, and the background of the outer portion of the hind wing yellow; this coloration is reversed in *iris*. The under surfaces of the wings are primarily yellow as are the sides and venter of the body instead of pinkish gray as in *iris*. The head and thorax above are chestnut brown instead of gray, shading to dark pink on the abdomen.

MALE: Length of body 28 mm., of forewing 39 mm. (varying to 42 mm. in paratypes); expanse 76 mm. (varying to 83 mm. in paratypes). Antennae testaceous. Vestiture of head yellowish brown, darker above; that of dorsum of thorax dark brown, of sides and venter of thorax, of legs, and of venter of abdomen yellow, of dorsum of abdomen pink except at apex where it is yellow. Forewing with ground color of upper surface rich brown,

darker basally than apically; premedian line yellow, very strongly zigzag; postmedian line narrow, yellow, nearly parallel with outer margin; a minute white transverse streak at end of discal cell and forming the center of the discal spot which is not darker than the ground color but is surrounded by a gray line; area distal to postmedian line with extensive yellow shading which sets off an irregular subterminal line. Hind wing above with ground color basal to postmedian line pinkish gray, replaced by an area of long pink hairs at extreme base and near posterior margin; eye spot black with a white streak surrounded by a slightly bluish area; postmedian line strongly arcuate, black; ground color beyond postmedian line yellow; subterminal line strongly arcuate, dark brown, some brown shading along outer margin, and fringe brown. Under surfaces yellow dusted with dark brown especially on hind wing near apex of forewing; postmedian lines brown on both wings; apices of discal cells of both wings marked by a white streak, that of forewing surrounded by a round black spot.

TYPE MATERIAL: Holotype male and two male paratypes: Chiapas, Mexico. It is understood that these specimens are from near the town of Comitán.

### ***Automeris oaxaca*, new species**

In Bouvier's artificial grouping this species runs to the group of *A. nyctimene* (Latreille). Among the species of this group, *oaxaca* is closest to *nyctimene* and its subspecies, from which it differs by the smaller size, by the bright rather than pale yellow ring or area surrounding the eye of the hind wing, by the presence of only one or two small bluish spots or streaks in the red area of the eye near the pupil, by the position of the black undulate postmedian line of the hind wings which in *nyctimene* (except subspecies *lynx* Bouvier from Ecuador) is much nearer the eye margin than the wing margin but in *oaxaca* is midway between or nearer the wing margin, and by the subterminal line of the hind wings which in *nyctimene* is broad, in *oaxaca* but little broader than the postmedian line. In the last two characters as well as in the bright yellow of the area or ring around the eye, *oaxaca* approaches *A. saturata* (Walker), a species of Bouvier's group of *A. fusca* (Walker). *A. oaxaca* is more closely related to *saturata* than to *nyctimene*. It differs from *saturata* by the smaller size, reduction of the yellow of the hind wings to a ring or small area around the eye, the remaining portion of the discal area of the hind wing being

gray, by the grayish brown rather than brownish yellow under surfaces of the wings, and by the presence of one or two small bluish streaks or spots in the red area surrounding the pupil of the eye. It is the latter character which causes the species to run to the *nyctimene* group in Bouvier's key.

**MALE:** Length of body 22 mm., of forewing 39 mm. (40 mm. in paratype); expanse 78 mm. (80 mm. in paratype). Vestiture of head and body brown, darker above, blackish on dorsum of abdomen except apically. Forewings above brown, premedian line nearly straight, narrowly black, margined distally with yellowish; postmedian line nearly straight, oblique, narrowly black, margined basally with yellowish; oval spot at apex of discal cell darker than ground color and in paratype feebly margined by yellowish scales. Hind wing with ground color gray, eye spot surrounded by a bright yellow ring which is variably expanded distally to reach the postmedian line; eye spot large with an oval black center surrounded by a dark red field which is surrounded by a black ring, center with some white scales around its margin, red field with a bluish whitish streak above the ocellus; postmedian line narrow, black, scalloped, scarcely separated from the brown subterminal line, outer margin of wing brown. Under surfaces dull brown, forewings with infuscated apices, a blackish postmedian line and a black eye spot centered with white; hind wings with a small white spot at end of discal cell and weak postmedian and subterminal arcuate lines darker brown than those of ground color, these lines much basad to the comparable lines of upper surface.

**FEMALE:** Length of body 36 mm., of forewing 50 mm.; expanse 96 mm. Coloration similar to male but brown colors paler and more grayish, so that there is little contrast between the gray ground of the hind wing and the ground color of the forewing, discal spot on upper surface of forewing contrasting more with background, yellow ring surrounding eye spot of hind wing narrow throughout, not expanded to reach postmedian line.

**TYPE MATERIAL:** Holotype male, allotype female, and one male paratype: Oaxaca, Mexico.

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